Claims

1. Microbattery comprising, in the form of thin layers, at least first and second electrodes (3, 5) between which a solid electrolyte (4) is disposed, microbattery (1) characterized in that the first electrode (5) and the electrolyte (4) both comprise at least one common grouping of the $[XY_1Y_2Y_3Y_4]$ type, where X is located in a tetrahedron whose peaks are respectively formed by the chemical elements Y_1, Y_2, Y_3 and Y_4, the chemical element X being chosen from phosphorus, boron, silicon, sulphur, molybdenum, vanadium and germanium and the chemical elements Y_1, Y_2, Y_3 and Y_4 being chosen from sulphur, oxygen, fluorine and chlorine.

2. Microbattery according to claim 1, characterized in that the chemical elements Y_1, Y_2, Y_3 and Y_4 are identical.

3. Microbattery according to one of the claims 1 and 2, characterized in that at least one chemical element chosen from Y_1, Y_2, Y_3 and Y_4 forms a peak common to two tetrahedra.

4. Microbattery according to any one of the claims 1 to 3, characterized in that the electrolyte (4) comprises nitrogen.

5. Microbattery according to any one of the claims 1 to 4, characterized in that the electrolyte (4) comprises an alkaline metal ion A chosen from lithium and sodium.

6. Microbattery according to claim 5, characterized in that the first electrode (5) comprises the alkaline metal ion A, a mixture of metallic ions T comprising at least one transition metal ion chosen from titanium, vanadium, chromium, cobalt, nickel, manganese, iron, copper, niobium, molybdenum and tungsten and a chemical element B chosen from sulphur, oxygen, fluorine and

chlorine, so as to form a compound of $A_{x1}T_{y1}[XY_1Y_2Y_3Y_4]_{z1}B_{w1}$ type with the $[XY_1Y_2Y_3Y_4]$ grouping, with x_1 and $w_1 \geq 0$ and y_1 and $z_1 > 0$, a chemical element E chosen from metals and carbon being dispersed in the compound.

7. Microbattery according to claim 6, characterized in that the second electrode (3) comprises at least one grouping of the $[X'Y'_1Y'_2Y'_3Y'_4]$ type, where X' is located in a tetrahedron whose peaks are respectively formed by the chemical elements Y'_1, Y'_2, Y'_3 and Y'_4, the chemical element X' being chosen from phosphorus, boron, silicon, sulphur, molybdenum, vanadium and molybdenum and the chemical elements Y'_1, Y'_2, Y'_3 and Y'_4 being chosen from sulphur, oxygen, fluorine and chlorine.

8. Microbattery according to claim 7, characterized in that the second electrode (3) comprises the alkaline metal ion A, a mixture of metallic ions T' comprising at least one transition metal ion chosen from titanium, vanadium, chromium, cobalt, nickel, manganese, iron, copper, niobium, molybdenum and tungsten and a chemical element B' chosen from sulphur, oxygen, fluorine and chlorine, so as to form a compound of $A_{x2}T'_{y2}[X'Y'_1Y'_2Y'_3Y'_4]_{z2}B'_{w2}$ type, with the $[X'Y'_1Y'_2Y'_3Y'_4]$ grouping, with x_2 and $w_2 \geq 0$ and y_2 and $z_2 > 0$, a chemical element E' chosen from metals and carbon being dispersed in the compound so that the first and second electrodes (5, 3) have different intercalation potentials of the alkaline metal ion A.

9. Microbattery according to claim 8, characterized in that T and T' are identical.

10. Microbattery according to one of the claims 8 and 9, characterized in that E and E' are identical.

11. Microbattery according to any one of the claims 7 to 10, characterized in that the electrolyte (4) comprises the groupings $[XY_1Y_2Y_3Y_4]$ and $[X'Y'_1Y'_2Y'_3Y'_4]$.

12. Microbattery according to any one of the claims 7 to 10, characterized in that the elements X', Y'_1, Y'_2, Y'_3 and Y'_4 are respectively identical to the elements X, Y_1, Y_2, Y_3 and Y_4.

13. Microbattery according to claim 6, characterized in that the second electrode (3) is formed by the alkaline metal A or an alloy of the alkaline metal A.

14. Microbattery according to claim 6, characterized in that the second electrode (3) is formed by a material able to be alloyed with the alkaline metal A.

15. Microbattery according to claim 6, characterized in that the material able to be alloyed with the alkaline metal A is made of silicon, carbon or tin.

16. Microbattery according to claim 6, characterized in that the second electrode (3) is formed by a mixed chalcogenide comprising a transition metal.

17. Microbattery according to any one of the claims 11 to 16, characterized in that a first intermediate thin layer (8) comprising the respective constituents of the first electrode (5) and of the electrolyte (4) is arranged between the first electrode (5) and the electrolyte (4), the concentrations of the constituents of the first electrode (5) and of constituents of the electrolyte (4) varying respectively from 0 to 1 and from 1 to 0, from the electrolyte (4) to the first electrode (5).

18. Microbattery according to claim 17, characterized in that a second intermediate thin layer (7) comprising the respective constituents of the second electrode (3) and of the electrolyte (4) is arranged between the second electrode (3) and the electrolyte (4), the concentrations of the constituents of the second electrode (3) and of the electrolyte (4) varying

respectively from 0 to 1 and from 1 to 0, from the electrolyte (4) to the second electrode (3).

19. Method for production of a microbattery (1) according to claim 12, characterized in that it consists in successively depositing on a substrate (1a):

- a first thin layer forming the second electrode (3) by means of a first sputtering target comprising at least the compound of $A_{x2}T'_{y2}[XY_1Y_2Y_3Y_4]_{z2}B'_{w2}$ type and the chemical element E',
- a second thin layer forming the electrolyte (4) by means of a second sputtering target comprising at least the grouping of $[XY_1Y_2Y_3Y_4]$ type,
- and a third thin layer forming the first electrode (5) by means of a third sputtering target comprising at least the grouping of $A_{x1}T_{y1}[XY_1Y_2Y_3Y_4]_{z1}B_{w1}$ type and the chemical element E.

20. Method for production of a microbattery according to claim 19, characterized in that a first intermediate thin layer (7) is deposited on the second electrode (3) by means of the first and second sputtering targets before deposition of the electrolyte (4).

21. Method for production of a microbattery according to claim 20, characterized in that a second intermediate thin layer (8) is deposited on the electrolyte (4) by means of the second and third sputtering targets before deposition of the first electrode (5).

22. Method for production of a microbattery according to any one of the claims 19 to 21, characterized in that the electrolyte (4) is deposited in the presence of gaseous nitrogen.

23. Method for production of a microbattery according to any one of the claims 19 to 22, characterized in that first and second current collectors (2, 6) are

deposited on the substrate (1a), by cathode sputtering, before deposition of the second electrode (3).